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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,584	07/31/2001	Jin-Shan Wang	82817HEC	1795

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EXAMINER

SHOSHO, CALLIE E

ART UNIT

PAPER NUMBER

1714

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/918,584	Applicant(s) WANG ET AL. <i>J</i>	
	Examiner Callie E. Shosho	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Objections

1. Claims 11-13 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot refer to two sets of claims to different features. See MPEP § 608.01(n).

Claim 11 recites “The composition of claim 1” and recites “M¹, M², and m are defined as in claim 4”. Thus, the claim is objected to because it refers to both the composition of claim 1 as well as substituents found in claim 4. It is suggested that the specific M¹ and M² groups and m value from claim 4 be inserted into claim 11 in place of the phrase “as defined in claim 4”.

Similar language is found in claims 12 and 13.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 6 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites wherein “R² is as defined above”. The scope of the claim is confusing because it is not clear by this phrase where R² is defined. It is suggested that the specific R² groups be inserted into the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-4, 7, 10-12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lent et al. (U.S. 5,929,134) in view of Wang et al. (U.S. 6,252,025).

Lent et al. disclose ink jet ink comprising water, humectant, and 2-5% dye covalently bonded to resin (col.3, lines 24-26 and col.7, lines 4-6, 41-43, and 59-61).

The difference between Lent et al. and the present claimed invention is the requirement in the claims of hyperbranched polymeric dye.

Wang et al. disclose hyperbranched polymer having dye chromophore pendant on the polymer chain wherein the hyperbranched polymer is obtained by chain polymerization process using branching monomers which comprise chain polymerizable group and separate reactive site which is activated and initiates the polymerization. The dyes include azo, anthraquinone, and phthalocyanine dyes. It is disclosed that such hyperbranched vinyl polymer with dye is suitable for use in ink jet inks. The motivation for using such hyperbranched vinyl polymer with dye is their solubility, absorption, migration, and viscosity are tunable and they do not sublime, are non-abrasive, and generally have low toxicity (col.1, lines 10-17 and 24, col.2, lines 49-62, col.4, lines 33-35, col.5, lines 16-24 and 32-35, col.9, line 60, and col.10, lines 30-33).

In light of the motivation for using hyperbranched polymer with dye disclosed by Wang et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such hyperbranched polymer with dye in the ink jet ink of Lent et al., and thereby arrive at the claimed invention.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lent et al. in view of Wang et al. as applied to claims 1-4, 7, 10-12, and 18 above, and further in view of Evans et al. (U.S. 6,468,338).

The difference between Lent et al. in view of Wang et al. and the present claimed invention is the requirement in the claims of specific type of dye.

Evans et al., which is drawn to ink jet ink, disclose the use of pyrazoleazoindole dye in order to produce stable, bright, high density images (col.1, lines 58-60, col.2, lines 29-47, and col.13, lines 29-32).

In light of the motivation for using specific type of dye, it therefore would have been obvious to one of ordinary skill in the art to use such pyrazoleazoindole dye in order to produce stable, bright, high density images, and thereby arrive at the claimed invention.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lent et al. in view of Wang et al. as applied to claims 1-4, 7, 10-12, and 18 above, and further in view of either Chen et al. (U.S. 6,431,700) or Evans et al. (U.S. 6,001,161).

The difference between Lent et al. in view of Wang et al. and the present claimed invention is the requirement in the claims of specific type of dye.

Chen et al., which is drawn to ink jet ink, disclose the use of polymer latex having metal complex dye such as 8-heterocyclylazo-5-hydroxyquinone contained therein. The motivation for using such dye is to produce an image with good waterfastness and light fastness (col.1, lines 65-67, col.2, lines 44-48, and col.8, lines 24-26).

Alternatively, Evans et al., which is drawn to ink jet ink, disclose the use of metal complex dye such as 8-heterocyclylazo-5-hydroxyquinone in order to produce image with outstanding stability and bright hue (col.2, lines 17-45).

In light of the motivation for using specific dye disclosed by Chen et al. or Evans et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such metal complex dye in order to produce image with good waterfastness and light fastness, or alternatively, to produce image with outstanding stability and bright hue, and thereby arrive at the claimed invention.

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lent et al. in view of Wang et al. as applied to claims 1-4, 7, 10-12, and 18 above, and further in view of Mead et al. (U.S. 5,596,027).

The difference between Lent et al. in view of Wang et al. and the present claimed invention is the requirement in the claims of specific type of humectant.

Mead et al., which is drawn to ink jet ink, disclose the use of glycerin or diethylene glycol humectant in order to prevent the ink from drying during printing operation or during storage. Mead et al. also disclose the equivalence and interchangeability of glycerin or diethylene glycol humectant with ethylene glycol humectant as disclosed by Lent et al. (col.12, lines 45-55).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use glycerin or diethylene glycol humectant in the ink jet ink of Lent et al., and thereby arrive at the claimed invention.

10. Claims 1-3, 5, 8, 10, 12, 14, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sacripante et al. (U.S. 6,025,412) in view of Figuly (U.S. 5,136,014).

Sacripante et al. disclose ink jet ink comprising water, humectant such as glycerin or diethylene glycol, and 2-20% polyester having dye attached within the base chain itself or attached to the base chain as side chain component wherein the dye includes phthalocyanine dye (col.1, lines 5-10, col.3, lines 42-50, col.3, line 64-col.4, line 5, col.5, lines 59-67, col.6, lines 58 and 60-61, and col.9, lines 24-28 and 48).

The difference between Sacripante et al. and the present claimed invention is the requirement in the claims of hyperbranched polymeric dye.

Sacripante et al. disclose polyester having dye attached, however, there is no disclosure that the polyester is hyperbranched polyester.

Figuly disclose hyperbranched polyester prepared by polycondensation of monomer of the formula XR^2Y where X and Y are selected from $-CO_2R'$ and OR'' where R' is H or C_1-C_{12} alkyl and R'' is aliphatic or aromatic group. The motivation for using such hyperbranched polyester is to reduce viscosity (col.2, lines 21-51, col.3, lines 56-58, col.6, lines 3-4 and 20-26, and col.14, lines 39-43) which is especially relevant to ink jet inks where it is important that the viscosity of the ink is low enough so that the ink does not clog the printer nozzles.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use hyperbranched polyester as the polyester in the ink jet ink of Sacripante et al. in order to produce ink which has suitable viscosity for printing, and thereby arrive at the claimed invention.

11. Claims 6, 9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sacripante et al. in view of Figuly as applied to claims 1-3, 5, 8, 10, 12, 14, and 17-18 above, and further in view of *Polymer Science Dictionary*.

The difference between Sacripante et al. in view of Figuly and the present claimed invention is the requirement in the claims regarding how the hyperbranched polyester is obtained.

Figuly discloses producing polyester by self-condensation of monomer XR^2Y where X and Y are selected from $-\text{CO}_2\text{R}'$ and OR'' where R' is H or $\text{C}_1\text{-C}_{12}$ alkyl and R'' is aliphatic or aromatic group, however, there is no disclosure of producing polyester by reacting monomers of the type disclosed in present claims 6, 9, and 13.

However, it is well known as found in *Polymer Science Dictionary* (page 407) that polyester is also produced from condensation reaction of diacid, which corresponds to presently claimed $\text{R}^2\text{-M}^5_{\text{q}}$ when R^2 is alkyl or aromatic group and M^5 is $-\text{COOH}$, with triol, which corresponds to presently claimed $\text{R}^3\text{-M}^6_{\text{t}}$ where M^6 is $-\text{OH}$.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to produce polyester by reacting triol with dicarboxylic acid, and thereby arrive at the claimed invention.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sacripante et al. in view of Figuly as applied to claims 1-3, 5, 8, 10, 12, 14, and 17-18 above, and further in view of Evans et al. (U.S. 6,468,338).

The difference between Sacripante et al. in view of Figuly and the present claimed invention is the requirement in the claims of specific type of dye.

Evans et al., which is drawn to ink jet ink, disclose the use of pyrazoleazoindole dye in order to produce stable, bright, high density images (col.1, lines 58-60, col.2, lines 29-47, and col.13, lines 29-32).

In light of the motivation for using specific type of dye, it therefore would have been obvious to one of ordinary skill in the art to use such dye in the ink jet ink of Sacripante et al. in order to produce stable, bright, high density images, and thereby arrive at the claimed invention.

13. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sacripante et al. in view of Figuly as applied to claims 1-3, 5, 8, 10, 12, 14, and 17-18 above, and further in view of either Chen et al. (U.S. 6,431,700) or Evans et al. (U.S. 6,001,161).

The difference between Sacripante et al. in view of Figuly and the present claimed invention is the requirement in the claims of specific type of dye.

Chen et al., which is drawn to ink jet ink, disclose the use of polymer latex having metal complex dye such as 8-heterocyclylazo-5-hydroxyquinone contained therein. The motivation for using such dye is to produce an image with good waterfastness and light fastness (col.1, lines 65-67, col.2, lines 44-48, and col.8, lines 24-26).

Alternatively, Evans et al., which is drawn to ink jet ink, disclose the use of metal complex dye such as 8-heterocyclylazo-5-hydroxyquinone in order to produce image with outstanding stability and bright hue (col.2, lines 17-45).

In light of the motivation for using specific dye disclosed by Chen et al. or Evans et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such dye in the ink jet ink of Sacripante et al. in order to produce image with good waterfastness and light fastness, or alternatively, to produce image with outstanding stability and bright hue, and thereby arrive at the claimed invention.

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Frechet et al. (U.S. 6,300,424) disclose hyperbranched polyester and polyamide.

Tomalia et al. (U.S. 6,312,679) disclose dendrimer with dye attached which is suitable for use in ink jet inks.

Matyjaszewski et al. (U.S. 6,124,411) disclose preparing hyperbranched polymers using atom transfer radical polymerization.

Vieira et al. (U.S. 5,073,448) disclose that Direct Blue 199 and Direct Blue 86 are phthalocyanine dyes.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the

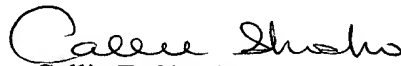
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organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Callie E. Shosho
Examiner
Art Unit 1714

CS
April 16, 2003